

REMARKS

Claims 13-19 and 22 have been cancelled. These claims were directed to a non-elected species.

Applicant acknowledges with appreciation that claims 2-8 are directed to allowable subject matter.

New claim 23 is based on original claim 1 together with allowable claim 4. Claims 24-30 are based on other original claims depending from original claim 1.

Allowance of claims 23-30 is solicited.

Claims 1, 10, and 20 stand rejected as anticipated by ZIEGENBERG et al. 5,214,710 ("ZIEGENBERG").

Claim 1 has been amended to change "permanent magnet means" to --at least one permanent magnet--.

Claim 1 is believed patentable as ZIEGENBERG does not disclose each recited feature of claim 1.

The teachings of ZIEGENBERG are not very clear, and therefore, it appears that the teachings have been misunderstood.

To establish a common nomenclature please consider the magnetic circuit of a typical prior art drive unit of a loud speaker, see enclosed Figure 1 below.

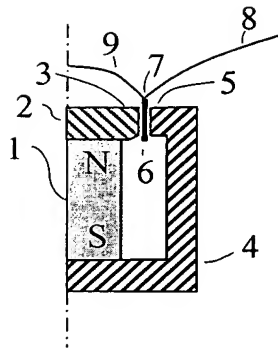


Fig 1

The typical prior art drive unit comprises of a permanent magnet 1, with an axial orientation of its magnetic field (indicated with a North/South mark).

This can also be referred to as an axial polarization of the permanent magnet. On top of the permanent magnet rests a block of soft magnetic material 2, extending to a first pole piece 3. The lower part of the permanent magnet 1 is in connection with another piece of soft magnetic material, the magnetic case 4, often with a U-shaped cross section. The magnetic case extends to the second pole piece 5. The gap between the pole pieces 3 and 5 is referred to as the pole gap 6. Commonly, the magnetic field in the pole gap has a radial direction, indicated with arrows.

The permanent magnet 1, the soft magnetic block 2, the first pole piece 3, the magnetic case 4 and the pole piece 5 constitute a (permanent) magnetic circuit of the drive unit. Into a pole gap 6 the coil 7 is inserted. Attached to the coil is a speaker diaphragm 8 and possibly also a dome 9 and a spider

(not shown). It should be noted that the coil generally is not considered as a part of the magnetic circuit of the drive unit.

This established nomenclature is used in the description and claims of the present application.

ZEIGENBERG teaches a compound loudspeaker drive unit with a plurality of coaxial arranged drive units (4.1+4.2).

The permanent magnets of the permanent magnets means of ZEIGENBERG are axially polarized permanent magnet rings, ((4.1.1-4.1.3) column 6, lines 36-48, for example).

The described arrangement of the permanent magnet rings with soft magnetic spacing washers (4.1.4 and 4.1.5) has the clear intention to produce a magnetic field that is not in the radial direction. "As a result, a particularly intense focusing of the magnetic field can be achieved, since the magnetic field lines representing the magnetic field are thereby largely prevented from escaping in the radial direction from the permanent magnet rings 4.1.1, 4.1.2 and 4.1.3" (column 6, lines 55-59). No other orientation of the polarization of permanent magnets than the axial is described in the description, nor indicated in the figures. It is also clear that no radial fields are intended. We therefore respectfully disagree with the Examiner's opinion that ZEIGENBERG discloses permanent magnet means which has a radially extending magnetization direction.

The coil arrangement 4.2 according to ZEIGENBERG comprises of a large plurality of coils 4.2.1-4.2.16. The coil

arrangement may comprise thin-walled rings 4.3.1-4.3.4 mounted on groups of coils. The thin walled rings may be provided with right-angled extensions 4.4.1-4.4.8, all with the purpose of improving the magnetic flux by "*guiding the magnetic field from one pole to the other without leakage*" (column 8, lines 1-15). It is stated that the coil arrangement 4.2 is a part of the permanent magnet system 4.1 (column 7, line 30). It should be noted that the thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) are described and depicted as mounted on the coils and hence moving with the coils as a driving current is fed through the coils. It should also be noted that the thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) are presented as possible improvements to the coil arrangements, not necessary for the functionality of the drive unit.

The individual coils are centered as regards to the soft magnetic spacing washers, which are said to focus the permanent magnetic fields. This is a strong indication on that it is the fields primarily originating from the magnetic washers that should interact with the fields generated in the coils to generate the necessary movement of the coils in order to produce sound.

The Official Action identifies the thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) as a pole piece and the gap between the right-angled extensions

(4.4.1-4.4.8) and the permanent magnet rings (4.1.1-4.1.3) as a pole gap, wherein the coil arrangement 4.2 is moving. With due respect, we argue that this is a misunderstanding. The thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) are a part of the coil arrangement and moving with it. Hence, the thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) can not be a pole piece or forming a pole gap in the sense that these terms are generally known, and as defined above and in the present application. A pole piece that is fixed to the coil is physically unfeasible since no motion of the coil would be induced by the drive current. By the same argument no pole gap can be present between the right-angled extensions (4.4.1-4.4.8) and the magnetic ring. Further no indications are given that the coils (4.2) should be placed in the space between the right-angled extensions (4.4.1-4.4.8) and the top and/or lower end of the magnet rings. On the contrary, it is stressed that the coils should be centered around the magnetic washers. Accordingly, the magnetic washers could possibly be seen as pole pieces and a pole gap may be envisioned in-between two adjacent washers, which would give a pole gap with axially extending magnetization direction. However, this is not clear from the teachings of ZEIGENBERG.

Thus, ZEIGENBERG does not disclose any permanent magnet with radially extending magnetization direction, nor a pole gap which provide a radially directed magnetic field.

In addition, applicant respectfully disagrees with the opinion that the thin-walled rings (4.3.1-4.3.4) and the right-angled extensions (4.4.1-4.4.8) read on the pole piece as defined in the present application.

Reconsideration and allowance of claims 1, 10 and 20 are respectfully requested. Allowance of claim 1 and the dependent claims is requested.

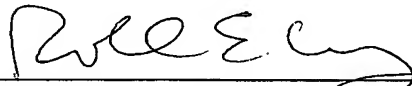
Should any of the above argument not be convincing, or the claims not allowed, it is respectfully requested that a specific explanation be provided so that applicant can understand any basis barring allowance of the claims.

In view of the above, applicant believes that the present application is in condition for allowance and an early indication of the same is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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